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EXAMINER

HAMMER, KATIE L

ART UNIT	PAPER NUMBER
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1796

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/599,027	Applicant(s) ZHANG, LIWEN	
	Examiner KATIE HAMMER	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/18/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

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Claims 1-17 are pending in this application.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 8, 11, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Okamura (US 3,616,169).

As to claims 1-3, Okamura (US '169) teaches a kind of yarn of animal collagen fiber, comprising 1-100 wt% of dispersing collagen fiber derived from leathers and/or animal skins, and 0-99 wt% of textile fiber, said collagen fiber and textile fiber being

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twisted together (chromed collagen fibers obtained by chemical or physical treatment of the derm or true skin of natural leather, see col. 1, lines 44-49; yarn which has been spun and twisted from a fibrous mixture of cotton and chromed collagen fiber, see col. 5, lines 9-11); the yarn wherein the collagen fiber is derived from at least one kind of animals including cattle, sheep, horses, dogs, pigs, deer, rabbits, crocodiles and snakes (chromed collagen fibers obtained by chemical or physical treatment of the derm or true skin of natural leather, see col. 1, lines 44-49; it is noted that natural leather must be derived from at least one kind of animal); the yarn of animal collagen fiber wherein the textile fiber is at least one of natural fibers and synthetic fibers including cotton, hemp, wool, silk, terylene, acrylic, nylon, polyamide, and viscose staple (nylon twisted with chromed collagen fiber, see Example 3; cotton twisted with chromed collagen fiber, see Example 4).

Okamura (US '169) teaches all of the limitations of the instant claims. Therefore, Okamura anticipates claims 1-3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 8-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033).

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Okamura (US '169) teaches the yarn of animal collagen fiber as described above, but fails to teach or disclose a process for manufacturing the yarn.

As to claims 4, 9, and 11, Steffan et al. (US '033), in an analogous art of method for making collagen fibers, teaches a process for manufacturing the yarn of animal collagen fiber of claim 1, comprising the following steps: choosing tanned leather materials, loosing fibers, assorting, blending, carding, drawing and twisting, wherein an opener is used to loose fibers (tendons from calf treated with an alkali treatment, transferred into a tanning drum, fibers are separated, treatment with tanning agent, fibers dissociated on a carding machine, fiber bands are stretched and twisted, chemical treatment opener is used to loose the fibers, see col. 4, line 43 to col. 5, line 57); the process wherein in the carding step a carding machine to make the bunchy collagen fibers and textile fibers form continuous fiber assemble with a particular linear density which is homogeneously blended and arrayed orderly in longitudinal direction (fibers dissociated on a carding machine, see col. 5, lines 24-40); the process wherein select different roller, abrasion, ring for different diameter and length of the yarns (preyarn is stretched and twisted on condensing ring spinning frame, the number of yarn twists depends mostly on the intended yarn strength and fiber length, see col. 5, lines 48-57).

As to claim 8, Okamura (US '169) teaches the process wherein a multi-layer cotton mixing machine or a method for spreading horizontally and taking directly can be used to blend for the blending step (blend of the chromed collage fiber formed into

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nonoriented web by treatment successively with a land feeder and a land webber, see col. 3, line 73 to col. 4, line 7).

Therefore, in view of the teaching of Steffan, one having ordinary skill in the art at the time the invention was made would be motivated to prepare the yarn of animal collagen fibers of Okamura by the process taught by Steffan to arrive at the claimed invention because Steffan suggests that the method to prepare collagen fibers contains steps of common knowledge, but also provides unique properties to the fibers (see col. 4, lines 23-34). Steffan clearly teaches the claimed process, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process of manufacturing to make the yarn of animal collagen fiber suggested by Okamura with a reasonable expectation of success for fibers subjected with ease to further textile processing (see Steffan, col. 4, lines 33-34), and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033), further in view of Fujii et al. (US 3,314,861).

Okamura (US '169) in view of Steffan (US '033) teaches a process for manufacturing the yarn of collagen fiber as described above, but fails to teach or disclose the use of acid protease and the pH value in the solution being controlled between 3 and 6.

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As to claim 5, Fujii et al. (US '861) teaches a process for manufacturing the yarn of animal collagen fiber, wherein acid protease is used for deliming, and the pH value in the solution is controlled between 3 and 6 (insoluble collagen of calf skin could be digested with the common proteolytic enzymes under acid conditions to generate collagen fibers, see col. 2, lines 32-40; adjusted to pH of 6.2, see Examples 2, 3, 8; pH of 3.0 in Example 14; collagen solution formed can used to prepare yarns or textiles, see col. 7, lines 46-48).

As to claim 13, Steffan teaches the process wherein for the washing step saponified mixtures are cleaned by ambient water at 30-40 centigrade, followed by washing with ambient water one to two times to make the pH value between 6.5-8 (warm aqueous solution of sodium bicarbonate at a temperature of 40 degrees Celsius and subsequently washed with water for 30 minutes, see Example 1, lines 56-60).

Therefore, in view of the teaching of Fujii et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing a yarn of collagen fibers as taught by Okamura and Steffan by incorporating the use of the acid protease and pH range as taught by Fujii et al. to arrive at the claimed invention because Steffan teaches a liming step in the collagen fiber preparation (see Example 2, line 63). Fujii et al. clearly teaches the use of the claimed acid protease and pH range for collagen fiber preparation, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success for

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solubilizing insoluble collagen (see Fujii et al., col. 2, lines 32-34), and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033), further in view of Sakashita et al. (US 6,160,096).

Okamura (US '169) in view of Steffan (US '033) teaches the yarn of animal collagen fiber as described above, but fails to teach or disclose the process wherein the fibers are loosened by a reciprocating liquid opener.

As to claim 6, Sakashita et al. (US '096) teaches the process wherein the fibers are loosened by a reciprocating liquid opener having a container and at least a beater, the liquid in the liquid opener is water, at least one of 0.2-2 percent (by weight of water) washing agent, 1-20 percent (by weight of water) lipid and product thereof, 0.2-1.5 percent (by weight of water) penetrating agent and 0.3-0.5 percent (by weight of water) basic substances is added into water in the liquid opener, the beater to make the adhesive substances such as fiber matrix among the collagen fibers become lubricating agent again under the effect of the liquid and make the materials expanding (desirable to remove the impurities such as lipids of collagen by applying a treatment widely employed for treating hides, for example the raw hide is dipped in lime water to loosen the collagen structure, then followed by an acid-alkali treatment, an enzyme treatment, or a solvent treatment, see col 3, lines 54-65).

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Therefore, in view of the teaching of Sakashita et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura and Steffan by incorporating the process for loosening fibers as taught by Sakashita et al. to arrive at the claimed invention because Steffan teaches the original, rather compact fibers of the tendons or hides are loosened (see col. 2, lines 63-68). Sakashita et al. clearly teaches the use of the claimed loosening process, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success for removing impurities present in the insoluble collage (see Sakashita et al., col. 3, lines 54-65) and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan et al. (US 4,404,033), further in view of Ueda et al. (US 2004/0073010 A1).

Okamura (US '169) in view of Steffan (US '033) teaches a process for manufacturing the yarn of collagen fiber as described above in the rejection for instant claim 4, but fails to teach or disclose the loosened collagen fibers separated by wind.

As to claim 7, Ueda et al. (US '010) teaches the process wherein the loosened dispersing collagen fibers are separated by wind, longer fibers are distributed into a different zone from that of the shorter fibers by the function of airflow, then assorting

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according to the length of the fibers (winding collagen fiber around a pipe or bar, see para. 0072).

Therefore, in view of the teaching of Ueda et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura and Steffan by incorporating the process for the winding as taught by Ueda et al. to arrive at the claimed invention because Steffan teaches treatment of hides in the manner of the leather industry (see col. 5, lines 60-63). Kunovice et al. clearly teaches the use of the claimed winding process, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033), further in view of Foster et al. (US 2002/0104305 A1).

Okamura (US '169) in view of Steffan (US '033) teaches a process for manufacturing the yarn of collagen fiber as described above, but fails to teach or disclose the use of a drawing machine.

As to claim 10, Foster et al., in analogous art of a method of processing textile materials, teaches the process wherein in the drawing step, a drawing machine is used to drawn and level fibers one to three times, each fiber is continuously extended to

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achieve the object for improving the uniformity of the fibers (stable twisting and drawing machine shown in Figure 26, see para. 0068; the yarn may be drawn prior to being cooled and twisted, see para. 0010 and 0012; heated yarn is drawn, see para. 0054).

Therefore, in view of the teaching of Foster et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura and Steffan by incorporating the use of a drawing machine taught by Foster et al. to arrive at the claimed invention because Steffan teaches the stretching and twisting of the collagen fibers on a spinning frame apparatus (see Steffan col. 5, lines 45-49). Foster et al. clearly teaches the use of the claimed drawing machine, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success for stretching and twisting the fibers and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan et al. (US 4,404,033) and Fujii et al. (US 3,314,861), further in view of Kunovice et al. (US 3,607,609).

Okamura (US '169) in view of Steffan et al. (US '033) and Fujii et al. (US '861) teaches a process for manufacturing the yarn of collagen fiber as described above in the rejection for instant claim 5, but fails to teach or disclose the detailed procedure of the liming step.

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As to claim 12, Kunovice et al. teaches the process wherein the liming step uses calcium hydroxide as the primary ingredient, adding 1-3 percent (weight of rawhide) sodium sulfate and 0.1-0.5 percent sodium hydroxide, water is 1.5-2 times that of the rawhide, the temperature for the liming solution is at 30-50 centigrade, and the time for soaking is 2-24 hours (see Example 2; it is noted that one of ordinary skill in the art could optimize the percentages and time period for soaking by routine experimentation, burden shifted to applicant to prove that the claimed ranges produce a new and unexpected result, and do not just differ in degree from the prior art results, see MPEP 2144.05).

Therefore, in view of the teaching of Kunovice et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura, Steffan, and Fujii et al. by incorporating the process for the liming step as taught by Kunovice et al. to arrive at the claimed invention because Steffan teaches any liming step in the manner of the leather industry (see col. 5, lines 60-63). Kunovice et al. clearly teaches the use of the claimed liming process, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success and would expect such a process to have similar properties to those claimed, absent unexpected results.

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Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033) and Fujii et al. (US 3,314,861), further in view of Ueda et al. (US 2004/0073010 A1).

Okamura (US '169) in view of Steffan (US '033) and Fujii et al. (US '861) teaches a process for manufacturing the yarn of collagen fiber as described above in the rejection for instant claim 5, but fails to teach or disclose the detailed procedure of the deliming step.

As to claim 14, Ueda et al. (US '010) teaches the process wherein for the deliming step, adding 2-3 percent (by weight of the hide) ammonium sulfate, 0.2-0.5 percent protease and 1-2 times of water, soaking alternated with rolling at pH value between 3 and 6, and at the temperature between 35 and 40 centigrade for 1-2 hours by removing basic ions in hide and simultaneously further hydrolyze the fiber matrix of rawhide, fat, and non-fiber protein, then the impurities are removed with water, for the hide with furs 3-4 percent (by weight of hide) alkali sulphide including 10-15 percent lime paste, 1-2 percent sodium hydroxide and 1-2 times of water, is added before liming, the furs are taken off from the hide when dipping for 2-16 hours, and then removed by washing (ammonium sulfate with adjusted pH to obtain the desired collagen fiber, see para. 0025; sodium hydroxide used to raise the pH to swell the fibers, see para. 0034 and 0047; conventional leather treatments with fibers soaked in lime and enzyme treatment, see para. 0018; it is noted that the order of steps and reaction conditions could be optimized and arrived at by one of ordinary skill in the art).

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Therefore, in view of the teaching of Ueda et al., one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura, Steffan, and Fujii et al. by incorporating the process for the deliming step as taught by Ueda et al. to arrive at the claimed invention because Steffan teaches treatment of hides in the manner of the leather industry (see col. 5, lines 60-63). Kunovice et al. clearly teaches the use of the claimed deliming process, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success and would expect such a process to have similar properties to those claimed, absent unexpected results.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033) and Fujii et al. (US 3,314,861), further in view of Bartlett (US 4,147,511).

Okamura (US '169) in view of Steffan (US '033) and Fujii et al. (US '861) teaches a process for manufacturing the yarn of collagen fiber as described above in the rejection for instant claim 5, but fails to teach or disclose the details of the tanning and softening step or use of the wringing machine.

As to claims 15-16, Bartlett (US '511) suggests the process wherein for the tanning and softening step, the chrome tanning method or plant tanning method and other organic or mineral tanning method in the current technology is performed in the opener to make the hide reciprocating torn while tanned so that the collagen fibers are

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basically loosened, after tanned, the resulting raw materials are softened by emulsifiable solution and lipid to prevent from cohesion after dehydration (tanning of leather by chrome tanning methods, then subjected to a fatliquoring process where they are lubricated so they remain pliable after being dried, see col. 1, lines 30-45); the process wherein a wringing machine is used to make water content between 20-30 percent (hides are wrung by machine to remove excess moisture, see col. 1, lines 35-36; one can process hides to almost any degree of wetness which is desired, see col. 2, lines 50-57).

Therefore, in view of the teaching of Bartlett, one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura, Steffan, and Fujii et al. by incorporating the process for the tanning and softening step and the wringing machine to arrive at the claimed invention because Steffan teaches the use of several tanning agents and the removal of fluid from the collagen fibers (see col. 3, lines 41-68). Bartlett clearly teaches the use of the tanning and softening process, as well as the wringing machine, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of success for retaining the softness of the collagen fibers and removing excess moisture and would expect such a process to have similar properties to those claimed, absent unexpected results.

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Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (US 3,616,169), in view of Steffan (US 4,404,033) and Fujii et al. (US 3,314,861), further in view of Heany (US 1,585,613).

Okamura (US '169) in view of Steffan (US '033) and Fujii et al. (US '861) teaches a process for manufacturing the yarn of collagen fiber as described above in the rejection for instant claim 5, but fails to teach or disclose that the loosening fibers step uses a trapeziform opener or a gill box rotary opener or a cutting machine with three cylinders.

Heany (US '613) teaches the use of cutting machines to loosen the fibers used for manufacturing yarns (see page 3, lines 4-24). It is noted that the number of cylinders found in the cutting machine could be chosen by one of ordinary skill in the art based upon the loosening results for the fibers. Burden is shifted to the applicant to prove the criticality of the three cylinders to show unexpected results.

Therefore, in view of the teaching of Heany, one having ordinary skill in the art at the time the invention was made would be motivated to modify the process for manufacturing the yarn of collagen fibers as taught by Okamura, Steffan, and Fujii et al. by incorporating the process for loosening fibers using a cutting machine because Steffan et al. teaches dissociating and untangling the collagen into individual fibers (see col. 5, lines 42-45). Heany clearly teaches the use of the cutting machine, and, thus, a person of ordinary skill in the art would be motivated to select the instantly claimed process for manufacturing the yarn of collagen fiber with a reasonable expectation of

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success for loosening the collagen fibers and would expect such a process to have similar properties to those claimed, absent unexpected results.

Conclusion

The references listed on form PTO-1449 have been reviewed by the examiner and are considered to be cumulative to or less material than the prior art references relied upon in the rejection above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATIE HAMMER whose telephone number is (571)270-7342. The examiner can normally be reached on Monday to Friday, 10:00am EST to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on (571) 272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/KLH/